DOCUMENT RESUME

ED 089 581 HE 005 310

AUTHOR	Centra, John A.; Linn, Robert L.
TITLE	Student Points of View in Ratings of College Instruction.
INSTITUTION	Educational Testing Service, Princeton, N.J.
REPORT NO	RB-73-60
PUB DATE	Oct 73
NOTE	19p.; Educational Testing Service Research Bulletin
EDRS PRICE	MF-$0.75 HC-$1.50 PLUS POSTAGE
DESCRIPTORS	*College Faculty; College Students; Course Evaluation; *Faculty Evaluation; *Higher Education; Research Projects; *Student Attitudes; Teacher Evaluation; *Teacher Rating

ABSTRACT

This study investigated student points of view in their ratings of specific courses and instructors by analyzing student responses within each of three classes separately, and then sought to generalize the results further by additional analyses, with 300 students randomly selected from 402 classes in five colleges. Different points of view were found for student ratings of course examinations, textbooks and supplementary readings, and class discussions. These various points of view were moderately related to such student characteristics as grades and sex, although not in all three of the classes studied. This last point underscores the importance of the context (i.e., the particular course) in understanding or interpreting the meaning of student ratings. (Author)

ED 089581

RB-73-60

RESEARCH BULLETIN

STUDENT POINTS OF VIEW IN RATINGS OF COLLEGE INSTRUCTION

John A. Centra
Educational Testing Service

and

Robert L. Linn
University of Illinois

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
NATIONAL INSTITUTE OF EDUCATION
THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS STATED DO NOT NECESSARILY REPRESENT OFFICIAL NATIONAL INSTITUTE OF EDUCATION POSITION OR POLICY

PERMISSION TO REPRODUCE THIS COPYRIGHTED MATERIAL HAS BEEN GRANTED BY
Educational Testing Service
TO ERIC AND ORGANIZATIONS OPERATING UNDER AGREEMENTS WITH THE NATIONAL INSTITUTE OF EDUCATION. FURTHER REPRODUCTION OUTSIDE THE ERIC SYSTEM REQUIRES PERMISSION OF THE COPYRIGHT OWNER

This Bulletin is a draft for interoffice circulation. Corrections and suggestions for revision are solicited. The Bulletin should not be cited as a reference without the specific permission of the authors. It is automatically superseded upon formal publication of the material.

HE 005 310

Educational Testing Service
Princeton, New Jersey
October 1973

STUDENT POINTS OF VIEW IN RATINGS OF COLLEGE INSTRUCTION

Abstract

This study investigated student points of view in their ratings of specific courses and instructors by analyzing student responses within each of three classes separately, and then sought to generalize the results further by additional analyses with 300 students randomly selected from 402 classes in five colleges. Different points of view were found for student ratings of course examinations, textbooks and supplementary readings, and class discussions. These various points of view were moderately related to such student characteristics as grades and sex, although not in all three of the classes studied. This last point underscores the importance of the context (i.e., the particular course) in understanding or interpreting the meaning of student ratings.

STUDENT POINTS OF VIEW IN RATINGS OF COLLEGE INSTRUCTION

John A. Centra
Educational Testing Service

Robert L. Linn
University of Illinois

Most people who have taught realize that frequently there are several types or subgroups of students in the typical class, each of which may be reacting a little differently to the teacher and the course. These different reactions might be expected to be reflected in the end-of-course student ratings given the instructor. If so, there should be some way of identifying and describing these subgroups of students so that a better understanding of this diversity of viewpoints might be gained. This study, then, focuses on the different so-called "points of view" that students may have in their ratings of their college teachers and courses.

Rees (1969) also attempted to determine factors which represent points of view in student ratings of teachers. Students in the Rees study rated 11 types of teachers representing seven academic areas (e.g., English teachers, music teachers, history teachers). The resulting points of view, therefore, did not reflect differences among students in their reactions to specific instructor behavior, but rather students' notions about types of teachers in different fields of study.

By contrast, Yonge and Sassenrath (1968) investigated the relationship between student ratings of instructors and the personality ratings for each of three specific instructors. Their results indicated that while personality scores were related to student ratings of instruction, the findings were not consistent for all three instructors. That is, the type of student who tended to rate one instructor high on a given factor might

very well be the type of student who would rate another instructor low on the same quality. Yonge and Sassenrath concluded by emphasizing the importance of context--that is the particular course in which ratings are collected--as well as student points of view in interpreting student ratings of instruction.

The present study further investigates student points of view of specific instructors and courses by analyzing student responses within each of three classes separately and then, in a second study, analyzing responses across a much larger sample of courses. After identifying student points of view based on responses to the rating items, various student characteristics variables are related to the points of view to determine the extent to which these variables differentiate groups of students.

Method

As indicated two separate studies or analyses were conducted. The first study involved an obverse (or inverse) factor analysis within each of three large classes taught at a major university. This analysis resulted in the identification of several subgroups of students which were further analyzed by means of discriminant analysis. The second study sought to generalize the results further by additional analyses with 300 students randomly selected from 402 classes in five colleges. The instruments used in both studies were two highly similar versions of the Student Instructional Report (Centra, 1972).

Study 1

A natural science, a social science and a humanities class taught at a large midwestern university were used for the initial study. More specifically the three classes and the number of students selected randomly from each were: General Physics (103), Social Inequality (119), and Man and Religion (67).

Students in each of these classes had responded to the 1971 version of the Student Instructional Report (SIR). The instrument included some 29 items eliciting student ratings in such areas as the course organization and procedures, faculty-student interaction, lectures, assignments, and examinations. The items were scored on a one to four or one to five scale, with the higher score more favorable. Also included were five items dealing with individual student characteristics such as grade point average and expected grade in the course.

An obverse factor analysis using the 29 rating items to identify groups of students within each of the three classes was performed. Instead of analyzing the item or variable correlation matrix, which is usually the case, an obverse factor analysis analyzes the subject correlation matrix in an attempt to identify groups of individuals with similar patterns of responses. For each of the three courses, a principal axis analysis of the student correlation matrix was employed.

Results

On the basis of the break in the magnitude of the latent roots following the fifth root, five factors were rotated. A varimax rotation to five factors resulted in five groups of students for each course. Students with loadings

of .40 or higher were then noted, resulting in the following number of students within the five groups in each course:

General Physics: 30, 23, 23, 20, 6

Social Inequality: 45, 35, 16, 14, 6

Man and Religion: 19, 14, 11, 16, 5

These figures total slightly less than all students in the classes because a few students did not have loadings of at least .40 on any factor. The five or six students in the fifth group for each class would appear to be a minimum number to be considered a separate subgroup. To investigate how the groups differed in their responses to the SIR items, a discriminant analysis using the five groups and the 29 rating items was run for each of the three classes. Four discriminant functions for each course were significant ($p < .05$), but this was to be expected since the groups had been selected on the basis of how they differed in item responses. Of primary interest from the discriminant analysis were the items that had high correlations with the four discriminant functions. These results are presented in Table 1. Correlations between the four discriminant functions and the items are reported in Table 1 when the correlations are .20 or higher in absolute value. This is repeated in Table 1 for each of the three classes.

Insert Table 1 about here

Especially important for identifying how the groups differed in their ratings of instruction are the items that correlated fairly high with one or more of the discriminant functions, particularly if this occurred in two or three of the classes. Items in this category include:

- Whether the instructor made helpful comments on papers or exams. (Item 12)
- The overall value of class discussions. (Item 24)
- The overall effectiveness of the instructor. (Item 25)
- Overall rating of exams. (Item 22)
- Overall rating of supplementary readings. (Item 21)

and

- Whether the catalog description adequately describes the content and method of the course. (Item 17)

Moderate correlations may be noted for such items as the extent to which students thought they had been challenged by the course (Item 19), whether lectures were too repetitive of material in the textbook (Item 8), and whether the instructor was readily available to students (Item 6).

While the preceding analysis helped describe how the groups differed on the student rating items, a second question was whether known individual student characteristics discriminated among the groups. That is, could the groups be differentiated according to certain student information about the student? The student characteristics information, obtained from students in the last part of the questionnaire, included the following items: (1) major field (scored 1 if the course belonged to the student's major and 0 otherwise); (2) expected grade in the course; (3) cumulative grade point average (GPA); (4) level (freshman = 1, sophomore = 2, junior = 3, senior = 4, and graduate = 5); and (5) sex (female = 1, male = 2).

To investigate this question a second discriminant analysis, this time with the five groups within each class and the five student characteristics variables, was run next for each course. The results, summarized in Table 2, indicate that in only the Social Inequality course were any of the discriminant

functions significant. In that course the first function was significant ($p < .007$).

Insert Table 2 about here

The correlations of this function with the five student characteristics variables, reported in Table 3, indicated that student class level and grade expected in the course were most highly correlated, followed by cumulative grade point average. Students in groups that were high on the function tended to be freshmen and sophomores, to expect high grades in the course, and to have higher cumulative grade point averages. Groups at the other end of the continuum tended to consist of upperclassmen with lower expected grades in the course and a relatively lower GPA. The group that was highest on the student characteristic function was also lowest on the second function of the instructional rating items (column six of Table 1). This latter function had its highest correlations on the rating of exams and class discussions, as well as whether students thought the instructor made helpful comments on papers or exams. Thus for the Social Inequality course, lowerclassmen who expected a good grade in the course and who had a relatively high GPA tended to rate exams and class discussions high, and also agreed that the instructor's comments on papers or exams were helpful.

Insert Table 3 about here

Study 2

The preceding analyses in Study 1 revealed identifiable subgroups or points of view within each of three classes. But what kinds of subgroups of students would be found within a larger sample of classes and how might the groups be distinguishable? To answer these questions a random sample of 300 students was selected from 402 classes at five colleges. A 1972 version of the Student Instructional Report, which contained 31 items rating instruction as well as the five student characteristics items, was used for this study. As mentioned earlier, the items in this form overlapped considerably with those in the 1971 version of SIR used in Study 1. The scoring system for the two forms was identical.

Because differences in student responses would reflect differences between classes as well as individual differences, the first step in the analysis was to subtract the class mean from each student response. The resulting 300 x 31 matrix, then, consisted of deviation scores--specifically the difference between each student's response to each item and the mean response of the class. The values thereby obtained were dependent on differences among individuals within classes and included effects common to all classes. The second step followed a decomposition procedure developed by Eckart and Young (1936), and discussed by Tucker and Messick (1963), for uncovering the variety of points of view (or individual perceptual structures) represented in a total group. The Eckart-Young decomposition procedure provides two matrices: one of them characterizes the within subjects (students) variation and the other characterizes the within items variation. By inspecting the eigenvalues of the decomposition, it was

decided that three dimensions were adequate to describe the subject and item space. The first six eigenvalues were: 36.52, 18.12, 16.83, 14.56, 13.91, and 13.44. An oblique rotation of the subject space was next performed and the same transformation (inverted) was applied to the item space (see Pennell, 1972, equation 3).

In order to investigate the relationship of student characteristics to the dimensions that were identified, the subject scores on the three rotated dimensions were correlated with the five student characteristics items (major, expected grade, cumulative GPA, class level, and sex).

Results

The loadings on the three dimensions of the matrix that characterizes the within item variation are presented in Table 4. Factor I has its highest loadings on "Rating of quality of exams" (Item 34), "Instructor knew when students didn't understand (the material)" (Item 5), and "Exams reflected important aspects of the course" (Item 17). This might be called an Examinations factor.

Insert Table 4 about here

Factor II is primarily defined by "Textbook rating" and "Supplementary readings rating." For want of a better name this is labelled the Text factor. The third factor is called Course Quality and has its highest loadings on "Value of the course to the student" (Item 38), "Rating of the quality of the discussions" (Item 36), "Rating of the quality of the lectures" (Item 35), and "Work load of the course" (Item 22).

The correlations of the factor scores with the five individual characteristics are reported in Table 5. Factor I correlates between .37 and .43 in absolute value with all five of the individual characteristics to Higher ratings of the Examinations factor are more apt to be received from majors than from nonmajors, from students with high expected grade than low expected grade, from students with high GPA than low GPA, from lowerclassmen than upperclassmen, and from women than men. A similar pattern was also found for Factor III, Course Quality, except that the range of correlations was somewhat greater. They ranged from a low in absolute value of .26 for major to a high in absolute value of .48 for level. Thus, the judgment of Course Quality varies substantially with student class level, somewhat less with expected grade, GPA, and sex, and least with major.

Insert Table 5 about here

The correlations between Factor II, Text, and the five individual characteristics were much lower in level but the pattern of the signs of the correlations was the same as that for Factors I and III. The upperclassmen tended to be slightly more critical of the texts than the lowerclassmen ($r = -.21$). The other significant correlation ($p < .05$) was the .18 between Factor II and major. Thus, on the average, majors viewed the textbooks for the course slightly more favorably than did the nonmajors.

Discussion

Both of the studies reported here indicate identifiable points of view in student ratings of instruction. These points of view, represented

by factors, totalled as many as five for each of the larger classes included in this study, but would probably number fewer for smaller classes. They were distinguishable by the pattern of responses made to the instructional rating items. For example, analyses within each of three classes separately (Study 1) and across some 400 classes (Study 2) both indicated that groups of students differ in their ratings of the course examinations, in the textbook and supplementary readings, and in class discussions. In addition, students differed in their viewpoints regarding the value or challenge of the course to them.

All of these features--examinations, assignments, class discussions--would appear to be aspects of a course for which different types of students might understandably differ in their reactions. On the other hand, there were minimal differences on such aspects as the extent to which a course is organized, and the extent to which the instructor is available for help.

To what degree were these various points of view associated with identifiable student characteristics? For the five student variables included in the questionnaire, there was a moderate relationship. In Study 2, majors (vs. nonmajors), students with higher expected grades and high cumulative grade point averages, lowerclassmen (vs. upperclassmen) and women (vs. men) tended to rate higher the Examinations, Course Quality and, to a lesser extent, the Text factors. The tendency for nonmajors in a field, or students with lower grades (or expected grades), to rate a course lower in these particular aspects is not surprising; students with less of an interest in a course might be expected to be more critical of examinations or course worth, as would students whose academic performance has been less than outstanding. The moderate relationship would, however, suggest that for some

courses these particular student variables do not distinguish the points of view. This in fact is what the results of Study 1 suggest. In only one of the three courses did student characteristics discriminate among the points of view. And for this one course the results paralleled the results of Study 2: lowerclassmen, those who expected a high grade and those with a relatively high GPA, tended to rate exams and class discussions higher. For two of the three courses, however, none of the discriminant functions were significant for the five groups which represented different student points of view.

It should be pointed out that there are any number of student characteristics variables that might identify points of view of instruction. Student need for academic achievement or social approval are just two that might affect their ratings of examinations or class discussions. And, as the results of this study suggest, some of these student characteristics would not necessarily affect the ratings of very many courses or instructors in exactly the same way. This underscores the point made by Yonge and Sassenrath (1968) that the context of the ratings (i.e., the particular course and instructor) are often important in understanding or interpreting the meaning of student ratings.

What, then, are the implications of this study for faculty members who use student ratings? It would appear that teachers should look at the distribution of student responses to each rating item, and not only at the average response for the class. This would be particularly important for items that deal with class examinations, discussions, and assignments. While it may not be possible, or some might argue even desirable, for teachers to adjust all aspects of a course to student expectations, teachers ought to at least be aware of how they are interacting with different segments of the class.

References

Centra, J. A. The student instructional report: Its development and uses. SIR Report No. 1, Princeton, N. J.: Educational Testing Service, 1972.

Eckart, C., & Young, G. The approximation of one matrix by another of lower rank. Psychometrika, 1936, 1, 211-218.

Pennell, R. Finding points of view in judgment data. Educational and Psychological Measurement, 1972, 32 (4), 965-974.

Rees, R. D. Dimensions of students' points of view in rating college teaching. Journal of Educational Psychology, 1969, 60 (6), 476-482.

Tucker, L. R, & Messick, S. An individual differences model for multi-dimensional scaling. Psychometrika, 1963, 28 (4), 333-367.

Yonge, G. D., & Sassenrath, J. M. Student personality correlates of teacher ratings. Journal of Educational Psychology, 1968, 59 (1), 44-52.

Table 1

Correlations Greater Than .20 in Absolute Value of Each Item with the Discriminant Functions

Item	Physics 1st Funct.	Physics 2nd Funct.	Physics 3rd Funct.	Physics 4th Funct.	Social Inequality 1st Funct.	Social Inequality 2nd Funct.	Social Inequality 3rd Funct.	Social Inequality 4th Funct.	Man and Religion 1st Funct.	Man and Religion 2nd Funct.	Man and Religion 3rd Funct.	Man and Religion 4th Funct.
1 Instructor objectives have been made clear								-.29			-.23	
2 Student aware of overall course outline								-.22				
3 Instructor stressed what he thought students should learn				.34				-.21				-.28
4 Instructor used class time well		-.21			-.20							-.35
5 Instructor was well-prepared for each class		.20		-.24			-.27	.33				
6 Instr. was readily available to students												
7 Instr. knew when students didn't understand		.20						.33		-.22		.33
8 Lectures too repetitive of textbook				+.28					.32			-.33
9 Instructor encouraged students to think				.24			-.2[illegible]					
10 Instr. seemed concerned with students' progress		-.23					-.[illegible]0	-.25				
11 Instructor used examples or illustrations	.35	-.38	.54			-.24	-.64		-.24	-.24	-.59	.20
12 Instructor made helpful comments on papers or exams				.22	.22		-.22					
13 Instr. raised challenging questions or problems												
14 Instr. was open to questions or comments								-.28			-.26	
15 Instr. told students of how they would be evaluated								.39	.44		-.49	-.21
16 Instr. summarized major points in lect/disc.				-.29			-.28	-.21				-.28
17 The catalog accurately described course content				.30	.21			-.25				-.27
18 Student interest in subject matter was stimulated				.39	.25						-.27	
19 Student was challenged				.21				.39	.52			
20 Textbook rating				.21	-.22	-.23						
21 Supplementary readings rating		-.38			.31	-.56	.20					-.26
22 Rating of quality of exams				.32						-.21		-.41
23 Rating of quality of lectures	.58	.23	-.23	.29	-.34	-.28	-.24					-.42
24 Rating of quality of discussions				.32				-.45				
25 Overall effectiveness of instructor				-.27								
26 Level of difficulty of the course												
27 Work load of the course					.31							
28 Pace of the course												
29 Student satisfaction with class size												

Table 2

Summary of Discriminant Analysis for Each Class and the Five Student Characteristics Variables

	df hypothesis	df	F	p
Physics	20	309.4	.92	.564
Social Inequality	20	355.8	2.00	.007
Man and His Religion	20	186.7	.79	.729

Table 3

Correlations between the Student Characteristics Variables and the Discriminant Function for the Social Inequality Course

Student Variables	Correlations
Major Field vs. Other	-.13
Cumulative GPA	.43
Grade Expected in Course	.51
Class Level	-.66
Sex	.23

Table 4

Dimensions of the Item Factor Matrix

Item		Loadings on Each Dimension[1]		
		I Examinations	II Text	III Course Quality
1.	Instructor objectives have been made clear	.66	-.24	.86
2.	Agreement between objectives and what was taught	.72	-.21	.72
3.	Instructor used class time well	.68	-.60	.91
4.	Instructor was readily available to students	.78	-.35	.23
5.	Instructor knew when students didn't understand	1.46	-.16	.29
6.	Lectures too repetitive of textbook	.39	.11	-.90
7.	Instructor encouraged students to think	.67	-.21	.57
8.	Instructor seemed concerned with students' progress	1.25	-.21	.63
9.	Instructor made comments on papers or exams	1.13	-.12	.25
10.	Instructor raised challenging questions	.52	-.66	.94
11.	Student felt free to ask questions	1.09	-.56	.41
12.	Instructor was well-prepared for each class	.70	-.22	.79
13.	Instructor told students how they would be evaluated	.91	-.09	.47
14.	Instructor summarized major points in lectures/disc.	.75	-.27	.61
15.	Student interest in subject has been stimulated	1.08	-.03	1.15
16.	Scope of course has been too limited	.30	-.07	-1.12
17.	Exams reflected important aspects of the course	1.44	.27	-.04
18.	Student effort in the course	-.17	.18	1.32
19.	Instructor openness to other viewpoints	.96	-.56	.46
20.	Instructor has accomplished course objectives	1.15	-.39	.86
21.	Level of difficulty of the course	1.07	.17	-1.11
22.	Work load of the course	.91	.14	-1.51
23.	Pace of the course	.77	.04	-.66
24.	Use of examples or illustrations	.32	.17	.37
32.	Textbook rating	.59	2.78	1.16
33.	Supplementary readings rating	.74	2.60	1.01
34.	Rating of quality of exams	2.01	1.04	.64
35.	Rating of quality of lectures	1.22	.02	1.51
36.	Rating of quality of discussions	1.17	.11	1.63
38.	Value of the course to student	1.23	.68	1.67
39.	Overall effectiveness of instructor	1.22	.17	1.26

[1]Since the original score matrix rather than a correlation matrix is being approximated, values greater than 1.0 are to be expected.

Table 5

Correlations between Factor Scores and

Five Individual Characteristics

Individual Characteristic	Factor I Examinations	Factor II Text	Factor III Course Quality
Major	.37	.18	.26
Expected Grade in Course	.40	.06	.44
Cumulative GPA	.40	.07	.42
Level	-.42	-.21	-.48
Sex (F=1, M=2)	-.43	-.10	-.40